

What is claimed is:

1. A liquid crystal display device comprising respective pixels which are arranged in a matrix array by arranging a plurality of pixel rows each of which includes a plurality of pixels arranged in parallel in one direction in another direction which crosses one direction, selects each pixel row in response to a scanning signal, and supplies a video signal and a reference signal which becomes the reference with respect to the video signal to the respective pixels in each selected pixel row, wherein

drain signal lines which supply the video signal are arranged to cross gate signal lines which supply the scanning signal and counter voltage signal lines which supply the reference signal, and

the reference signal is supplied to the pixels for every selected pixel row and, at the same time, the counter voltage signal lines in other pixel rows except for the selected pixel rows are respectively configured to assume a floating state.

2. A liquid crystal display device comprising respective pixels which are arranged in a matrix array by arranging a plurality of pixel rows each of which includes a plurality of pixels arranged in parallel in one direction in another direction which crosses one direction, selects each pixel row in response to a scanning signal, and supplies a video signal and a reference

signal which becomes the reference with respect to the video signal to the respective pixels in each pixel row, wherein

drain signal lines which supply the video signal are arranged to cross gate signal lines which supply the scanning signal and counter voltage signal lines which supply the reference signal, and

the reference signal is supplied to the pixels for every selected pixel row and, at the same time, most of the gate signal lines and the counter voltage signal lines in other pixel rows except for the selected pixel rows are respectively configured to assume a floating state.

3. A liquid crystal display device defining regions which are surrounded by gate signal lines which extend in the first direction and are arranged in parallel in the second direction and drain signal lines which extend in the second direction and are arranged in parallel in the first direction as pixel regions, wherein

each pixel region includes a thin film transistor which is driven in response to a scanning signal from the gate signal line, a pixel electrode to which a video signal is supplied from the drain signal line by way of the thin film transistor and a counter electrode which generates an electric field between the counter electrode and the pixel electrode,

the liquid crystal display device includes counter voltage signal lines which run between respective gate signal lines and

are connected to the counter electrodes;

the liquid crystal display device includes means which makes most of other gate signal lines except for the gate signal line for supplying scanning signal assume a floating state, and

the liquid crystal display device includes means which supplies counter voltage signal to the counter voltage signal lines which run in the pixel regions which the thin film transistors drive by the gate signal lines to which the scanning signal is supplied and makes the other counter voltage signal lines assume a floating state.

4. A liquid crystal display device according to claim 1, wherein to each counter voltage signal line, a counter voltage signal is supplied through a switch which is turned on in response to a signal scanned by a drive circuit thereof, and when the signal is scanned and supplied to the next counter voltage signal line, the counter voltage signal line to which the counter voltage signal is supplied before the supply of the counter voltage signal to the next counter voltage signal line is made to assume a floating state.

5. A liquid crystal display device according to claim 4, wherein with respect to respective counter voltage signal lines, a plurality of selected counter voltage signal lines are formed into groups.

6. A liquid crystal display device according to claim 5, wherein the respective groups of counter voltage signal lines

have end portions thereof opposite to the counter-voltage-signal supply side connected to each other.

7. A liquid crystal display device according to claim 4, wherein the respective counter voltage signal lines are formed such that the respective counter voltage signal lines are connectable with correction wiring to which the counter voltage signal can be always supplied at respective end portions thereof opposite to the counter-voltage-signal supply side.

8. A liquid crystal display device according to claim 2, wherein the scanning signal is supplied to the respective gate signal lines through switches which are turned on in response to the signal scanned by the drive circuit, when the signal is scanned and supplied to the next gate signal line, the switches are turned off in response to an OFF signal, and when the scanning signal is supplied to the further next gate signal line, the gate signal line to which the scanning signal is supplied at the two preceding stage is made to assume a floating state.

9. A liquid crystal display device according to claim 2, wherein the polarities of the video signals which are respectively supplied to the respective drain signal lines have the same phase with respect to the neighboring drain signal lines.

10. A liquid crystal display device according to claim 9, wherein the polarity of the counter voltage signal which is supplied to the respective counter voltage signal lines by scanning is inverted every supply of the counter voltage signal.

11. A liquid crystal display device comprising pixels which are surrounded by gate signal lines which extend in the first direction and are arranged in parallel in the second direction which crosses the first direction and drain signal lines which extend in the second direction and are arranged in parallel in the first direction, wherein

each pixel includes a switching element which is turned on in response to a scanning signal from the gate signal line, a pixel electrode to which a video signal is supplied from the drain signal line through the switching element, and a counter electrode which is an electrode for generating an electric field between the counter electrode and the pixel electrode and to which a counter voltage signal scanned from a counter voltage signal line arranged substantially parallel to the gate signal line is supplied,

the counter voltage signal line is formed to cover the gate signal line by way of an insulation film and, at the same time, the counter electrode is connected to gate lines connected with the switching element of the pixel and counter voltage signal lines which cover the gate signal line which is formed to sandwich the pixel with the gate signal line, and

most of other gate signal lines except for the gate signal line to which the scanning signal is supplied are made to assume a floating state, and other counter voltage signal lines other than counter voltage signal lines to which counter video signal

is supplied are made to assume a floating state.

12. A liquid crystal display device according to claim 11, wherein the counter voltage signal lines and the counter electrodes which are connected to the counter voltage signal lines are formed of a light transmitting conductive layer.

13. A liquid crystal display device according to claim 12, wherein the counter voltage signal lines are electrically connected with metal conductive layers which are arranged on the same layer as and close to the gate signal lines which are covered with the counter voltage signal lines via through hole.

14. A liquid crystal display device comprising respective pixels which are arranged in a matrix array by arranging a plurality of pixel rows each of which includes a plurality of pixels arranged in parallel in one direction in another direction which crosses one direction, selects each pixel row in response to a scanning signal, and supplies a video signal and a reference signal which becomes the reference with respect to the video signal to the respective pixels in each selected pixel row, wherein

drain signal lines which supply the video signal are arranged to cross gate signal lines which supply the scanning signal and counter voltage signal lines which supply the reference signal,

the reference signal is supplied to the pixels for every selected pixel row and, at the same time, most of the gate signal

lines and the counter voltage signal lines in other pixel rows except for the selected pixel rows are respectively configured to assume a floating state, and

the scanning signal and the reference signal are respectively supplied from a single circuit and signals containing ON/OFF of the scanning signal and the reference signal are transmitted by shifting transmitting times from each other.

15. A liquid crystal display device according to claim 14, wherein the circuit includes terminals to which the signal containing ON/OFF of the scanning signal is always supplied and terminals to which the reference signal is always supplied, and the scanning signal and the reference signal are respectively transmitted to the gate signal lines and the counter voltage signal lines from the respective terminals selected through a switch circuit.

16. A liquid crystal display device according to claim 1, wherein the reference signal supplied to the counter voltage signal lines is a signal obtained by boosting an AC voltage waveform.

17. A liquid crystal display device comprising respective pixels which are arranged in a matrix array by arranging a plurality of pixel rows each of which includes a plurality of pixels arranged in parallel in one direction in another direction which crosses one direction, selects each pixel row in response to a scanning signal, and supplies a video signal and a reference

signal which becomes the reference with respect to the video signal to the respective pixels in each selected pixel row, wherein

drain signal lines which supply the video signal are arranged to cross gate signal lines which supply the scanning signal and counter voltage signal lines which supply the reference signal, and

the reference signal is supplied to the pixels for every selected pixel row and, at the same time, a voltage value of the signal is set corresponding to a voltage value of the video signal supplied to the pixel row.

18. A liquid crystal display device comprising respective pixels which are arranged in a matrix array by arranging a plurality of pixel rows each of which includes a plurality of pixels arranged in parallel in one direction in another direction which crosses one direction, selects each pixel row in response to a scanning signal, and supplies a video signal and a reference signal which becomes the reference with respect to the video signal to the respective pixels in each selected pixel row, wherein

drain signal lines which supply the video signals are arranged to cross gate signal lines which supply the scanning signal and counter voltage signal lines which supply the reference signal,

the reference signal is supplied to the pixels for every

selected pixel row and, at the same time, the counter voltage signal lines of other pixel rows except for the selected pixel row are made to assume a floating state, and

a drive circuit which transmits the reference signal is arranged parallel to a drive circuit which transmits the video signal.

19. A liquid crystal display device according to claim 18, wherein the drive circuit which transmits the reference signal and the drive circuit which transmits the video signal are respectively constituted of a plurality of semiconductor devices, the semiconductor devices which transmit the reference signal and the semiconductor devices which transmit the video signal are alternately arranged and, at the same time, these respective semiconductor devices are connected to each other through data transmission lines.

20. A liquid crystal display device according to claim 3, wherein the scanning signal is supplied to the respective gate signal lines through switches which are turned on in response to a signal scanned by the drive circuit, when the signal is scanned and supplied to the next gate signal line, the switches are turned off in response to an OFF signal, and when the scanning signal is supplied to the further next gate signal line, the gate signal line to which the scanning signal is supplied at the two preceding stage is made to assume a floating state.

21. A liquid crystal display device according to claim

3, wherein the polarities of the video signals which are respectively supplied to the respective drain signal lines have the same phase with respect to the neighboring drain signal lines.

22. A liquid crystal display device according to claim 21, wherein the polarity of the counter voltage signal which is supplied to the respective counter voltage signal lines by scanning is inverted every supply of the counter voltage signal.

23. A liquid crystal display device according to claim 2, wherein to each counter voltage signal line, a counter voltage signal is supplied through a switch which is turned on in response to a signal scanned by a drive circuit thereof, and when the signal is scanned and supplied to the next counter voltage signal line, the counter voltage signal line to which the counter voltage signal is supplied before the supply of the next counter voltage signal line is made to assume a floating state.

24. A liquid crystal display device according to claim 23, wherein with respect to respective counter voltage signal lines, a plurality of selected counter voltage signal lines are formed into groups.

25. A liquid crystal display device according to claim 24, wherein the respective groups of counter voltage signal lines have end portions thereof opposite to the counter-voltage-signal supply side connected to each other.

26. A liquid crystal display device according to claim 23, wherein the respective counter voltage signal lines are

formed such that the respective counter voltage signal lines are connectable with correction wiring to which the counter voltage signal can be always supplied at respective end portions thereof opposite to the counter-voltage-signal supply side.

27. A liquid crystal display device according to claim 3, wherein to each counter voltage signal line, a counter voltage signal is supplied through a switch which is turned on in response to a signal scanned by a drive circuit thereof, and when the signal is scanned and supplied to the next counter voltage signal line, the counter voltage signal line to which the counter voltage signal is supplied before the supply of the next counter voltage signal line is made to assume a floating state.

28. A liquid crystal display device according to claim 27, wherein with respect to respective counter voltage signal lines, a plurality of selected counter voltage signal lines are formed into groups.

29. A liquid crystal display device according to claim 28, wherein the respective groups of counter voltage signal lines have end portions thereof opposite to the counter-voltage-signal supply side connected to each other.

30. A liquid crystal display device according to claim 27, wherein the respective counter voltage signal lines are formed such that the respective counter voltage signal lines are connectable with correction wiring to which the counter voltage signal can be always supplied at respective end portions

thereof opposite to the counter-voltage-signal supply side.

31. A liquid crystal display device comprising respective pixels which are arranged in a matrix array by arranging a plurality of pixel rows each of which includes a plurality of pixels arranged in parallel in one direction in another direction which crosses one direction, selects each pixel row in response to a scanning signal, and supplies a video signal to the respective pixels in each selected pixel row, wherein

drain signal lines which supply the video signal are arranged to cross gate signal lines which supply the scanning signal,

the scanning signal is supplied to the respective gate signal lines through switches which are turned on in response to signal scanned by a drive circuit thereof, when the signal is scanned and supplied to the next gate signal line, the switches are turned off in response to an OFF signal, and when the scanning signal is supplied to the further next gate signal line, the gate signal line to which the scanning signal is supplied at the two preceding stage is made to assume a floating state, and

the respective gate signal lines are connected to a signal line to which the OFF signal is supplied through portions thereof which assume a floating state and diodes.

32. A liquid crystal display device comprising respective pixels which are arranged in a matrix array by arranging a plurality of pixel rows each of which includes a plurality of

pixels arranged in parallel in one direction in another direction which crosses one direction, selects each pixel row in response to a scanning signal, and supplies a video signal to the respective pixels in each selected pixel row, wherein

drain signal lines which supply the video signal are arranged to cross gate signal lines which supply the scanning signal,

the scanning signal is supplied to the respective gate signal lines through switches which are turned on in response to signal scanned by a drive circuit thereof, when the signal is scanned and supplied to the next gate signal line, the switches are turned off in response to an OFF signal, and when the scanning signal is supplied to the further next gate signal line, the gate signal line to which the scanning signal is supplied at the two preceding stage is made to assume a floating state, and

the respective gate signal lines are connected to a voltage signal line which is made to assume a floating state through portions thereof which assume a floating state and diodes.

33. A liquid crystal display device comprising respective pixels which are arranged in a matrix array by arranging a plurality of pixel rows each of which includes a plurality of pixels arranged in parallel in one direction in another direction which crosses one direction, wherein

the pixel includes a counter electrode which generates an electric field between the counter electrode and a pixel

electrode and a counter voltage signal line which supplies a counter voltage signal to counter electrodes of respective pixels of the sequentially selected pixel row in response to the selection,

drain signal lines which supply the video signals to the pixel electrodes are arranged to cross the counter voltage signal line,

the counter voltage signal is supplied to the respective counter voltage signal lines through switches which are turned on in response to a signal scanned by a drive circuit thereof, when the signal is scanned and supplied to the next counter voltage signal line, the counter voltage signal line to which the counter voltage signal is supplied before the supply of the counter voltage signal to the next counter voltage signal line is made to assume a floating state, and

the respective counter voltage signal lines are connected to the signal line to which the counter voltage signal is supplied through portions thereof which assume a floating state and diodes.

34. A liquid crystal display device comprising respective pixels which are arranged in a matrix array by arranging a plurality of pixel rows each of which includes a plurality of pixels arranged in parallel in one direction in another direction which crosses one direction, wherein

the pixel includes a counter electrode which generates

an electric field between the counter electrode and a pixel electrode and a counter voltage signal line which supplies a counter voltage signal to the counter electrodes of the respective pixels of the sequentially selected pixel row in response to the selection,

drain signal lines which supply the video signals to the pixel electrodes are arranged to cross the counter voltage signal line,

the counter voltage signal is supplied to the respective counter voltage signal lines through switches which are turned on in response to a signal scanned by a drive circuit thereof, when the signal is scanned and supplied to the next counter voltage signal line, the counter voltage signal line to which the counter voltage signal is supplied before the supply of the counter voltage signal to the next counter voltage signal line is made to assume a floating state, and

the respective counter voltage signal lines are connected to the voltage signal line which is made to assume a floating state through portions thereof which assume a floating state and diodes.

35. A liquid crystal display device comprising respective pixels which are arranged in a matrix array by arranging a plurality of pixel rows each of which includes a plurality of pixels arranged in parallel in one direction in another direction which crosses one direction, selects each pixel row in response

to a scanning signal, and supplies a video signal and a reference signal which becomes the reference with respect to the video signal to the respective pixels in each selected pixel row, wherein

drain signal lines which supply the video signal are arranged to cross gate signal lines which supply the scanning signal and counter voltage signal lines which supply the reference signal,

the reference signal is supplied to the pixels for every selected pixel row and, at the same time, most of the gate signal lines and the counter voltage signal lines in other pixel rows except for the selected pixel rows are respectively configured to assume a floating state,

the respective gate signal lines are connected to a first voltage signal line which is made to assume a floating state through portions thereof which assume a floating state and first diodes and the respective counter voltage signal lines are connected to a second voltage signal line which is made to assume a floating state through portions thereof which assume a floating state and second diodes, and

the first voltage signal line and the second voltage signal line are connected to each other via a third diode.

36. A liquid crystal display device comprising respective pixels which are arranged in a matrix array by arranging a plurality of pixel rows each of which includes a plurality of

pixels arranged in parallel in one direction in another direction which crosses one direction, selects each pixel row in response to a scanning signal, and supplies a video signal and a reference signal which becomes the reference with respect to the video signal to the respective pixels in each selected pixel row, wherein

drain signal lines which supply the video signal are arranged to cross gate signal lines which supply the scanning signal and counter voltage signal lines which supply the reference signal,

the reference signal is supplied to the pixels for every selected pixel row and, at the same time, most of the gate signal lines and the counter voltage signal lines in other pixel rows except for the selected pixel rows are respectively configured to assume a floating state,

the respective gate signal lines are connected to a first voltage signal line which is made to assume a floating state through portions thereof which assume a floating state and first diodes and the respective counter voltage signal lines are connected to a second voltage signal line which is made to assume a floating state through portions thereof which assume a floating state and second diodes, and

the first voltage signal line and the second voltage signal line are connected to a line which is grounded via a third diode and a fourth diode respectively.

37. A liquid crystal display device according to claim 31, wherein the diode is a double-way diode.

38. A liquid crystal display device according to claim 37, wherein the double-way diode has a semiconductor layer thereof formed of polysilicon and the double-way diodes are formed on a substrate on which the gate signal lines and the counter voltage signal lines are formed.